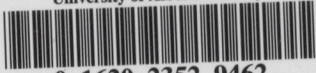


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Nor' West Miner

EDMONTON, ALBERTA

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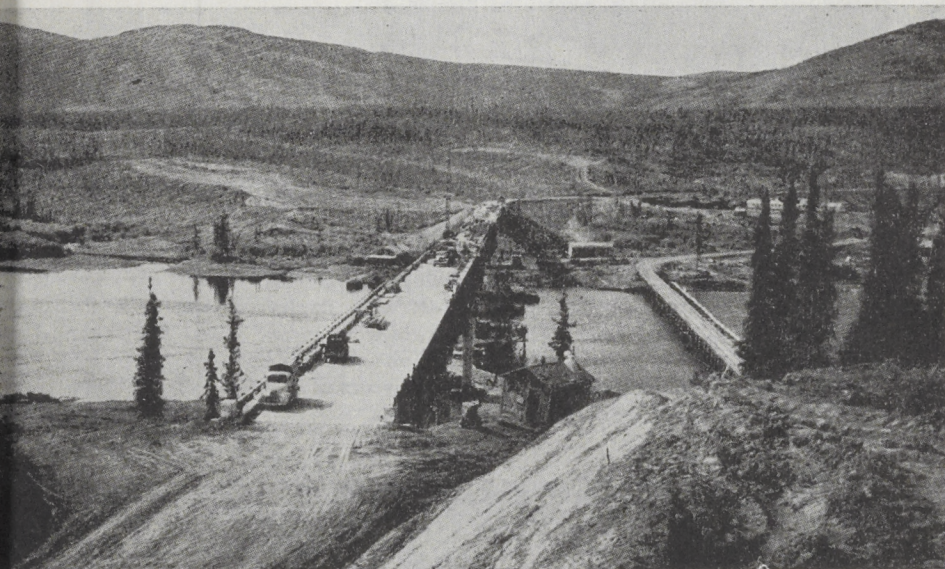
Devoted to development descriptive of the North West Territories, Northern British Columbia and the Yukon. Along the Trail of the Alaska Highway.

Published at Edmonton, Alberta—"The Gateway to the Far North and Alaska."

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More Riches from the New North

Discovery of Estimated 500,000,000 Barrels of Liquid Bitumen Adds to the Treasure House of the New North



Steel and concrete bridge on Alaska Highway, constructed over Teslin River at Mile 837.

U.S. Army photo.

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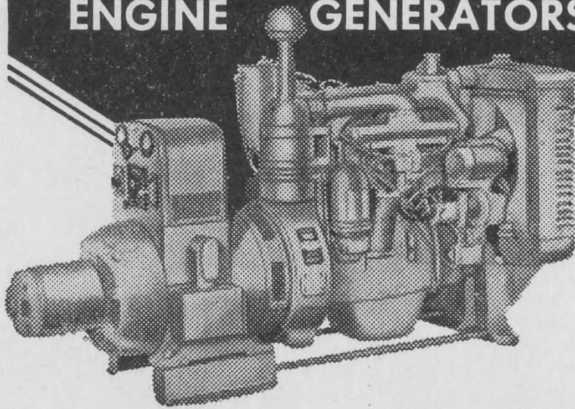
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THE NOR' WEST MINER

EDITOR—F. S. WRIGHT

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Says The Miner . . .

The announcement of Dr. G. S. Hume, Dominion Government geologist that liquid bitumen, estimated at around 500,000,000 barrels has been discovered by diamond drilling in the Athabasca Oil Sand areas is news of much importance. This liquid bitumen can be obtained without any great effort as regards separation processes and it is stated that when refined and cracked down into its various components it is worth at least \$7 a barrel.

* * *

If you multiply 500,000,000 by 7 you get the stupendous total of \$3,500,000,000. That amount should be enough to silence any critics who have maintained that Alberta Oil Sands have little value.

* * *

This liquid bitumen has all the essentials of heavy crude oil and when cracked and refined, produces high grade gasolenes, lubricating and fuel oils, various medicinal remedies and asphalt. This has been proved by the experiments that have been conducted in extracting bitumen from the solid sands. The drawback to commercial success in that process has been the cost of mining and treating the sands.

* * *

The question now arises as to who is to benefit by this discovery of such huge quantities of commercial oil. The situation in connection with title to the property on which the discoveries were made is rather involved. Under an old agreement Abasand Oils Ltd. had a lease on the ground which is owned by the Provincial Government. This lease was contingent upon certain conditions over a period of years being fulfilled as to production. These conditions were not fulfilled by Abasands. During the war years the Dominion Government undertook a large expenditure of public monies for the purpose of prospecting the Alberta Oil Sands. In addition it undertook a drilling

campaign which also cost the taxpayers large sums of money.

* * *

The discovery has been made upon lands owned by the Province and the prospecting has been paid for by the Canadian taxpayers at large. Therefore, it seems, it should be only common justice that this discovery should be developed to a commercial production basis by a joint Provincial and Dominion government controlled company and the expected very huge benefits which must result could then be used towards reduction of taxation in both the Dominion and the Province to the benefit of all. It should not be turned over to private interests, although a certain amount of compensation may be coming to Abasands who might have certain rights under any agreement made in the past.

* * *

However, it yet remains to be proven, according to reliable sources, as to whether the flow of liquid bituminum obtained by drilling, instead of being a free flowing, is not caused by the friction of the drilling furnishing enough heat to separate the bituminum from the sands as the drilling churns up the sand deposits.

* * *

In a recent article a Toronto mining paper is very emphatic in its contention that Canada cannot absorb more people. It pointed out that of the millions of acres of undeveloped territories, especially in the North, little of this huge area could sustain permanent population. Is it not sad to hear these pessimists harping on the same old theme, that Canada consists of a little strip 250 miles wide across the continent, ignoring the fact that in Alberta, Northern British Columbia and even in the North West Territories and the Yukon there are miles upon miles of good agricultural areas awaiting population. (See page 26).

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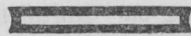
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HUGE LIQUID BITUMEN FLOW FROM OIL SANDS

Drilling reveals around 500,000,000 barrels of flowing bitumen 20 miles north of Fort McMurray, states report of G. S. Hume, Geological Survey, Ottawa.

Drilling of areas within the Bituminous Sands of Northern Alberta to locate a sufficiently extensive and rich deposit to support a large commercial production of oil was initiated in 1942 by the Mines and Geology Branch, Department of Mines and Resources under the supervision of the Director, W. B. Timm. The program of exploration, now being discontinued, was part of the Dominion Government's wartime investigations of the bituminous sands including the operation of an extraction and refining plant under an agreement with Abasand Oils, Ltd. The drilling was done in selected areas on both sides of Athabaska river. On the west side in the Mildred-Ruth area, opposite the mouth of Steepbank river, 20 miles north of Fort McMurray, the best results have been secured. A rich deposit containing liquid bitumen has been discovered. It is under light overburden and there is an excellent tailings disposal and plant site in proximity to Athabaska river. The results are as follows:

(1) Holes through the Bituminous Sands have been spaced mostly at one-quarter to one-eighth of a mile apart.

(2) Recovery of cores has been high, in excess of 90 per cent, mostly 93 to 95 per cent under improved technique developed during drilling progress.

(3) The size of area drilled on one-quarter and one-eighth mile spacing is about two square miles with a much larger area on one-half mile spacing.

(4) The Bituminous Sands have a thickness up to 229 feet but there is considerable variation in thickness due to erosion of the surface prior to glacial deposition.

(5) The quality of the deposit is also variable, partly due to interfingering of clay and shale bands with the bituminous sands and partly due to variable richness of the sands themselves. All assays are not yet available but the deposit is of high quality from 12 to 18 per cent bitumen by weight, maximum of fully impregnated sands is about 18 to 19 per cent bitumen by weight).

(6) Liquid bitumen occurs interstratified with the bituminous sands. The beds of liquid bitumen are a few inches to 21 feet

in thickness with 57 feet aggregate thickness in hole B15. A body of liquid bitumen (25 per cent sand content) as in hole B15, has 330,000 to 350,000 bbls. per acre. In 24 holes containing liquid bitumen, it has an aggregate thickness of 6" to 3' in 3 holes, 4 to 10' in eleven holes and the remainder are 11' (B55), 11' (B58), 12' (B18), 13'10" (B54), 18'7" (B62), 20'5" (B42), 25'10" (B61), 30'9" (B53), 42' (B17), 57' (B15) respectively. Thus the total amount of liquid bitumen in the deposit is large.

(7) Bitumen seepages occur above the Devonian limestone from bituminous sands on an escarpment facing Athabaska river. These are of great scientific interest.

(8) Various holes are not easily correlated but the deposit is tentatively considered to contain 400,000,000 to 500,000,000 bbls. of bitumen. It has sufficient size and quality to justify commercial operations when these are feasible.

Scientific deductions and conclusions:

(a) The evidence, although not conclusive, suggests the folding was post-Cretaceous in age.

(b) Interfingering of marine shales apparently from the west with the bituminous sands shows the deposit is relatively close to the outer west edge of a delta.

(c) The liquid bitumen is part of the succession of deposition and in this sense is contemporaneous with the beds with which it is interstratified. This is of great importance in relation to the time of origin of the bitumen (Oil, 10° A.P.I.).

(d) The evidence suggests a Lower Cretaceous origin for the bitumen (that is the same age as the McMurray formation which contains the bituminous sands).

(e) The lack of variation in the character of the bitumen suggests its quality when deposited, was about as at present and that migration has been relatively small.

(f) Live seepages show the bitumen is capable of movement under certain conditions.

The data obtained from drilling the Mildred-Ruth lakes area as well as that from other drilled areas is being compiled for publication.

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THE NEW NORTH

By CHARLES CAMSELL

This article, reprinted from the June, 1945, issue of the *Journal of the Royal Society of Arts*, London, England, and written by Chas. S. Camsell, former Deputy Minister of Mines and Resources, Ottawa, was awarded a special prize by the Society. Photos from the Bureau of Northwest Territories and Yukon Affairs.

Those of us whose mental picture of the Western Hemisphere is based on the Mercator projection maps which were in common use a generation ago will remember Canada sitting like a great red keystone on the top of the continent. That, of course, is a distorted picture, but even after the distortion has been corrected it remains a fact that Canada is one of the greatest land masses in the world under one sovereignty, and occupies a geographical position of rapidly-growing importance on the crossroads of the great intercontinental air routes of the future.

Any discussion of Canada must take into consideration the vast extent of that country. While it is a northern land, reaching into and including the most northern land surfaces adjacent to the North Pole, it also extends southwards far below the British Isles to latitude $41^{\circ} 41'$, which is slightly south of Rome in Europe and slightly south of the northern boundary of California in America. The area of this huge country is 3,695,189 square miles, which is equal to a little more than sixty-three times the area of England and Wales, and is only a little less than that of the whole continent of Europe.

The southern parts of Canada have been under development for many years, and are well known for what they have achieved in the fields of agriculture, mining, forest production, hydro-electric power, and manufactures. It is with the less known northern areas that this paper is principally concerned.

The Confederation consists of nine provinces, which form a broad belt across almost the centre of the North American continent, with its northern edge, for the most part, on the 60th parallel. North of that parallel lie the Yukon Territory, 207,076 square miles, and the Northwest Territories, 1,309,682 square miles, a total of 1,516,758 square miles. For practical purposes my discussion must also include certain areas in the northern parts of some of the provinces, particularly Alberta and British Columbia. This territory, administered until 1869 by the Hudson's Bay Company, was until that time, and for

many years later, valued mainly for its production of fur, although early explorers had also given some glimpse into the physical resources of the land. However, it may be said that except for the discovery and development of mineral resources—gold in the Yukon (Klondyke) in 1896, oil at Norman (Wells) in 1920, and gold at Yellowknife and radium at Great Bear Lake within the last two decades—the northwest has lain dormant, contributing to the economy of Canada mainly through the fur trade.

In the very northwestern corner of the continent lies Alaska, a possession of the United States, with its area of 586,400 square miles, including the "panhandle" which stretches part of the way along the northwestern side of British Columbia. The fact that this area belongs to the United States has had a significance in the war which could not well be foreseen, and promises to be an important factor in northwestern development after the return of peace. Now the northwest has burst into new life, and Canadians are beginning to realize that here is a part of their national heritage which may have vast potentialities, and which may offer to those of British stock possessed of the pioneer spirit an outlet for their energies when this war is over.

The outbreak of war with Japan gave a new interest and importance to the areas bordering on the North Pacific. This interest, however, relates not only to the coastal and adjoining areas, but is reflected in the great interior. This part of the North American continent, long so little known or understood, has acquired in the public mind a strategic importance which was not appreciated before Pearl Harbour. Similarly, the far eastern parts of the area have undergone a military development which seems sure to have its commercial effects after the war. The whole region has therefore assumed in the minds of forward-looking people an economic importance due to better understanding of its potentialities and to the new lines of communication which have been developed into it and through it.

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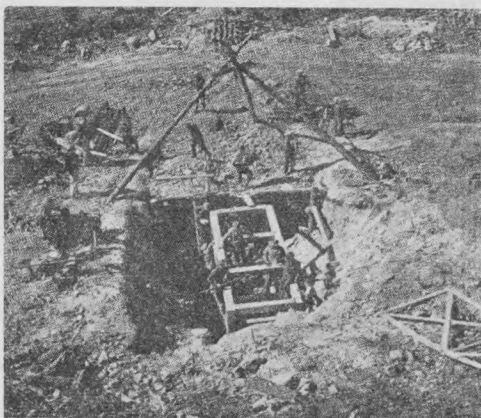
EDMONTON, Alberta

war were practically inaccessible except by water along the Pacific coast, and hence were very difficult to reach and, in case of necessity, to defend. While there was some agitation among west coast people before the war for an overland connection between Alaska and the rest of the continent, no definite steps, except preliminary surveys, were taken either by Canada or the United States toward the building of a highway. Public interest in such a project was restricted almost entirely to Alaska and the Yukon, the northwestern states, and British Columbia. As for the inside of this northern region, travel was confined, in Canadian territory at least, to the waterways, chief of which were the Mackenzie and Yukon Rivers, as they had been for a century and more.

As aeroplane travel became more practicable and popular, however, routes were developed from Edmonton northward into the Mackenzie Basin and were used largely by prospecting and mining companies. Only two or three years before the war a passenger service was opened northwest from Edmonton, in Alberta, to Whitehorse and Dawson, in Yukon Territory, cutting diagonally across the region now being opened up. After the outbreak of war the Government of Canada further developed and improved this particular route to the Yukon by the building of a line of airports at Fort St. John, Fort Nelson, Watson Lake and Whitehorse, and so the present airway, known as the Northwest Staging Route, came into being. This was the first route in the whole of our north country over which land planes could be used. It was strictly a Canadian undertaking and, as indicated by the Hon. C. D. Howe, Minister of Munitions and Supply (now Minister of Reconstruction), will be controlled by Canada. I make that observation in passing, as the close interlocking of United States and Canadian interests in the defence of North America have called for equally close association in their military effort, in which the strict limitations of national sovereignty have not been insisted upon. This co-operation, however, is based upon and made possible by assurance of a complete return to the original status.

It was in December, 1941, that the treacherous attack on Pear Harbour suddenly flung the searchlight upon Northwestern America. This attack was followed by the occupation of Kiska and Attu by Japan, and both Canada and the United

States suddenly awoke to the threat of their sovereignty in the North Pacific region by our Japanese enemies. It was obvious at once that the airways would have to be secured and airports serviced by an adequate ground transportation route. An agreement was consequently made between Canada and the United States for the building by the United States Corps of Engineers of a military road extending from the end of the railway at Dawson Creek, British Columbia, to Fairbanks, Alaska,



Top—Shaft building at Giant-Yellowknife.

Centre—Fishing Camp on Great Slave Lake.

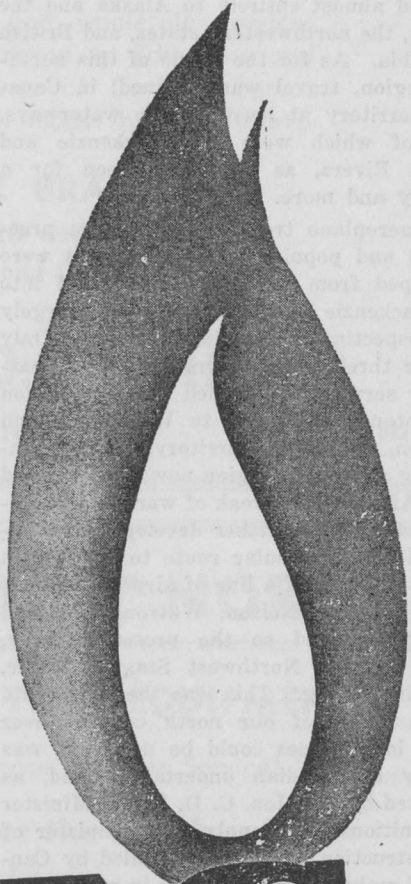
Bottom—A Field of Grain in the Yukon.

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now known as the Alaska Military Highway. Construction was commenced in March, 1942, and eight months later the road was officially opened for traffic. This highway cuts through more than 1,200 miles of Canadian wilderness, and its building was one of the engineering achievements of the war. At the same time other undertakings such as the Canol Project, which includes oil developments in the Lower Mackenzie, a pipeline west to Whitehorse, landing fields between Edmonton and Norman Wells, and a number of winter roads were started. These projects have now practically reached completion. (Oil production at Norman Wells on Canol account was discontinued on orders of the United States Government in March, 1945, and the refinery at Whitehorse closed in April, 1945. Disposition of surplus assets and supplies is now receiving attention. Control and maintenance of the Alaska Highway was assumed by Canadian authorities on April 1, 1946, and the possibility of the route being opened to the general public, after adequate tourist accommodations along the route have been provided, is being studied.)

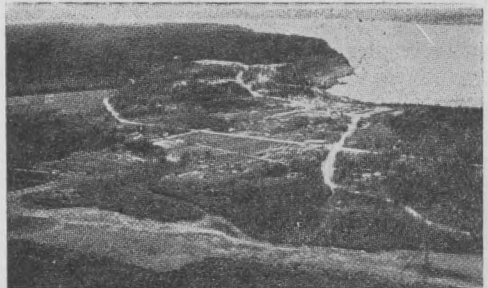
Developments in the north, including the provision of all these transportation facilities and the resources that become available through them, have thrown a searchlight of public interest on the region, so that people have begun to ask, "What is this country like, and what about the use of these transportation facilities in its economic development after the war?"

Another question among air-minded people arises from a study of the map of the Northern Hemisphere. It reveals that the shortest airway from the centre of the North American Continent to Japan, China, Siberia and other parts of Asia is directly through this region. What influence will the development of such airway have upon the territory it traverses?

These questions demand an answer. That answer was being sought under the auspices of Joint Economic Committees organized by Canada and the United States, which decided to sponsor a project involving a systematic study by the two countries of all the problems involved. This undertaking resulted in the U.S. and Canada collaborating with each other. The Canadian group included members of interested federal departments of government work-

ing in co-operation with the Governments of Alberta and British Columbia.

The territory which came under this study has an area of approximately 1,360,000 square miles, more than half of which lies in Canada. It is about the size of Europe excluding European Russia. It is inhabited by less than 100,000 people, of whom the greater number is in Alaska. Boundaries of the area are not clearly defined except on the north and west, where lie the Arctic and Pacific Oceans. The southern boundary of the area is about latitude 53°N. The eastern boundary follows the broad valleys of the Athabaska, Slave and Mackenzie Rivers. Within these boundaries lies some of Canada's finest virgin territory, more varied in its many resources than most of the unsettled country to the east of it, and, because most of it comes within the influence of warm



Top—Fort Smith from the Air.

Centre—Fort Norman, Mouth of Bear River.

Bottom—Dawson, Y.T., of Klondyke Fame.

winds from the Pacific, less rigorous in its climate.

A few words as to the climate may be in order at this point. Naturally, in so large an area there are many variations of climate and I can deal with the subject only in general terms. Low winter temperatures are carried well up the Mackenzie Valley and the intervening country on the west side of Hudson Bay to the Churchill and Nelson Rivers. Very low temperatures sometimes occur in these areas but the mean temperature is about 30° warmer than that portion of Siberia with the same relative situation. Long periods of steady cold are of very rare occurrence in this northwestern region. After the passage of a cold wave the wind shifts into a westerly or southerly quarter and the region is rapidly invaded by air of Pacific or southwestern origin with rising temperatures. In the Peace River country and northern British Columbia the winter is milder under the influence of the circulation from the Pacific and through the mountain valleys from the south. In spite of their higher latitude these areas are warmer than some mid-continent regions considerably south of them. This is especially true of the northern British Columbia coast where cloud and rain, rather than low temperatures, are the characteristics of winter. In early May the temperature begins to rise quickly in the southerly parts of this region but at the Arctic Circle the rapid climb begins somewhat later. By the beginning of July the country along the Mackenzie Valley and the basin drained by its tributaries reaches a mean temperature of about 60°. Temperatures exceeding 90° or even 95° sometimes occur in the short summer of the northwest. The long period of sunlight, with scarcely any darkness, contributes to the extremely rapid growth of native grasses and plants. The experimental farms at Fort Vermilion and at Beaverlodge grow wheat successfully. The entire area except for the northern Pacific coast is one of low precipitation, with an average of from five to ten inches of rain annually. The snowfall is equivalent to an additional five to seven inches of water. Of course, this is a country of low evaporation, so that these precipitations are more ample than they would be at southern latitudes. On the whole the climate, although rigorous, is quite livable, and throughout the area has not been a barrier to permanent settlement.

The Canadian part of the North Pacific region, which is all I propose to deal with in any detail, includes Yukon Territory, Mackenzie District of the Northwest Territories, northern British Columbia, and northern Alberta. The major physical features of the region trend northwest and southeast. On the region east of the area, and outside of it, is an extension of the Precambrian Shield, a rocky country of numberless lakes, rolling hills and, as you go north, little or no covering of soil or forests. Bordering this on the west is the northward extension of the Great Plains region occupied by the northward-flowing Mackenzie River and its tributaries, the Athabaska, Slave, Peace, Liard, Peel, and many others, and bearing on its surface such great lakes as Athabaska, Great Slave and Great Bear. This region is fairly uniform in contour. Its surface is broken only by isolated hills or ranges of low mountains, and is covered by forest to the shores of the Arctic. A great deal of the country back from the the rivers is the typical northern muskeg. While its principal economic value is and has been as a fur-bearing region, it offers in certain areas, notably the Peace River region, considerable opportunity for agricultural development. Its greatest potentialities in mineral resources are in oil. The Norman oil field lies in this area.

West of this, and covering the greater part of the area, is the Cordilleran region. This great physiographic unit is essentially mountainous with high plateaux separating the mountain units. It is more diversified than the other two in its physical characteristics, less uniform in the climatic conditions of temperature and precipitation, and more varied in its natural resources of forests, soils, minerals and wild life. Much of it extends above the timber line; some areas in the coast ranges are snow-covered throughout the year. A strip along the Arctic coast is tundra. Its rivers, Yukon in particular, follow the main northwest and southeast trends. Some of them, however, such as the Peace, Liard, Skeena and Stikine, cut across these trends and provide lines of access into the interior both from the east and from the west. Through this great region, before the coming of the aeroplane or the building of the highway, the principal lines of travel were along its rivers, mainly the Mackenzie and the Yukon, first of all by canoe and York boat, and during the last fifty years by steam-

boat. Today the aeroplane is the dominant method of transport for passengers.

Against this brief outline of the physical background, let me sketch, as far as is known, some of the resources of the region, and the possibilities of development that are latent therein. The first objective we have had in our study of this region is to determine what population we may expect it to support. The answer to that question is contained in another question, viz.: What industries are likely to be developed in it? This will depend upon its basic resources, on its lands, its minerals, its forests, and its wild life, its power potentialities and its transportation possibilities. These are the subjects to which we are giving our first attention and our first problem, therefore, is to determine what are the basic resources of the region.

Much has already been done in appraisal of these resources over the last fifty or sixty years but very much more is still to be done, as a great deal of the country is still a terra incognita. During the past two seasons (1943 and 1944) we made our biggest effort so far, and this effort was largely concentrated along the line of the highway and the pipeline, though much was done on oil investigations on the Athabaska and Mackenzie Rivers. Geological parties covered the highway from Dawson Creek to Whitehorse, and in 1944 extended their activities northward and eastward; soil and grazing specialists from the Department of Agriculture traversed the whole highway from Dawson Creek to Kluane Lake and on to Dawson with a view to appraising its agricultural possibilities. This year (1945) similar parties are in the Mackenzie Valley. We also had biological parties, botanical parties, forestry parties, and one party making a report on its scenic attractions. Fish experts covered Great Slave Lake and Mackenzie River. We also had water power engineers and others studying transportation problems. The results of all these investigations are now being analyzed. (Geological, agricultural, topographical, hydrographic, water-power, and fish surveys were continued in 1945 and 1946. An experimental sub-station was opened by the Department of Agriculture on the Alaska Highway about 100 miles west of Whitehorse in 1945, and a start was made on a similar project at Fort Simpson, in Mackenzie District in 1946. A commercial fishery was opened on Great Slave Lake in 1945 and continued

in 1946. During 1945 and 1946 considerable effort was devoted to the search for uranium, the element which has played such an important part in the development of atomic power. A new hydro-electric development was undertaken in the Yellowknife mining district in 1946.)

Of the basic resources let us take first of all its minerals because, after all, mining has so often proved in other parts of Canada to be the spearhead of economic development, and no doubt it will prove to be so here. The most notable developments in mining so far in the north country have been in lode gold at Yellowknife, pitchblende at Great Bear Lake, oil at Norman, placer gold in Cariboo, Omineca, Atlin and Klondkye, mercury, copper, silver, tungsten and coal in the mountains. These, however, do not exhaust the possibilities of mineral development by any means. A variety of rare minerals was discovered in the Precambrian area last summer, and throughout the mountains generally there are great areas where prospecting for metallic minerals may be carried on with promise of success.

In my opinion, however, the greatest promise of mineral development lies in metallics in the Precambrian, and in oil along the eastern edge of the mountains and on the lower Mackenzie. The bituminous sands of the Athabaska field are well known, and are now being given a thorough test at McMurray. (During the war years progress was made in developing the treatment of the sands for the economic extraction of bitumen. During the same period, considerable drilling was carried on to locate deposits of sand rich in bitumen.) The petroleum resources offer the greatest opportunities for early development and for increase of population. One of our expert investigators reports on this subject. "Here, then, we have the essentials for potential oilfields covering an area of over one thousand miles in length. This is probably the largest comparatively unexplored potential petroleum region in North America, and surface evidence of oil in the form of seepage occurs in several places." It was these oil resources which led the United States, with the consent of the Canadian Government, to build the Canol pipeline from Norman Wells to Whitehorse, a distance of 577 miles, so that gasoline might be available for motor use on the Alaska Highway and for aeroplane use in the protection of Alaska and the

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Pacific Coast. (Although operations connected with the Canol project were terminated in March, 1945, geological reconnaissance surveys and exploratory drilling in the Mackenzie District have since been carried on by private enterprise).

The agricultural possibilities of the area are substantial, but he would be a rash speaker who would attempt to define them in precise terms. More than soil and climate enter into agriculture; conditions change, and conclusions based upon the facts of the 1940's may be inaccurate in the 1960's, or before. What I mean is this: there was a time when the agricultural possibilities of Canada's prairie region, stretching from the Red River to the Rocky Mountains, were seriously questioned. Early frosts in many areas, drought in others, seemed immovable obstacles to a permanent and prosperous agriculture. But new varieties of grain, developed mainly through the scientific efforts of Canada's Department of Agriculture, together with changing climatic conditions due to settlement, overcame the menace of frost, and new methods of agriculture have mitigated the damage from drought except in most severe seasons and in the areas of lightest rainfall. Today that prairie country, once regarded as a doubtful agricultural asset, is recognized as the "bread basket of the Empire" and one of the greatest food-producing areas in the world. While one must be guarded in one's predictions about any new country, the future is just as likely to confound one for pessimism as for optimism. Some things, however, we know. Extensive research has already been made by Canada's Department of Agriculture, and perhaps I cannot do better than quote some conclusions arrived at by Dr. E. S. Archibald, Director of the Experimental Farm Service of Canada:

"Present information indicates that there may be about 15,000,000 acres of arable virgin land in the area defined in this paper as northwestern Canada. One-third of this area is serviced by existing railroads, while the remainder is largely inaccessible at the present time. These figures may be considered as conservative by some, as they do not include large areas of the poorer types of grey wooded soils.

"In time most of the better lands in northwestern Canada will be farmed. Their development, however, will be slow as compared with the opening up of the prairies in the early years of this century. The

wooded nature of these lands and their distance from railways will prevent any rapid development. This is not to be deplored, as it will permit an orderly settlement, based on soil survey and other pertinent information, to take place.

"Immediate future development should be confined to those areas at present serviced by railways and to locations where a certain amount of agriculture would assist materially in the development of other natural resources. After the good vacant lands in the Upper Peace and the railways belt of central British Columbia are settled it will be time to consider the opening up of the large Fort Vermilion-Fort Nelson plain and the Parsnip-Findlay Valley settlement. These areas are remote from established transportation routes at the present time, but they are not as remote as the Upper Peace was some thirty years ago.

"Some soil surveys have been conducted in the region, and it is hoped that after the war the present joint Dominion-Provincial soil surveys in Alberta and British Columbia can be expanded to a sufficient extent to be able to undertake vigorous programs in the northern areas of these provinces."

In agriculture, therefore, the greatest expansion in the foreseeable future will undoubtedly take place in the Peace River basin, although smaller areas of suitable agricultural land have been noted by investigators at Fort Nelson, in north central British Columbia and (in the Takhini-Dezedeash Valleys) near Champagne, west of Whitehorse. Elsewhere small-scale farming operations have been carried on at many points along the main valleys even to the edge of the Arctic Circle; enough, at least, to serve many of the local needs. As population increases, dependent upon other industries, no doubt this type of agriculture will be proportionately expanded.

The forest resources of the Canadian North and West are scattered over an immense area, and vary greatly according to latitude, altitude and climatic conditions. There is a heavy forest cover in the coast area, estimated to be capable of producing 240,000,000 board feet annually. This area is at present being drawn upon heavily for war purposes. It is estimated that the forests of the interior of British Columbia have an annual growth of 1,250,000,000 board feet, but only about one-fifth of this

is at present accessible. There are also substantial forest resources along the Alaska Highway, including some scattered stands in the Yukon Territory. Patches of merchantable spruce appear to occur generally along all the larger rivers in Mackenzie District, but they rarely occur with sufficient frequency to constitute any large reserve. There is, however, much small timber very valuable to campers and prospectors, and as a habitat for game and fur-bearing animals.

This brings me to a mention of the fur trade, which is the north's oldest industry and has been carried on for 150 years. It is the policy of the Government to protect the game as much as possible for the subsistence of the native population, and extensive game preserves have been established for that purpose. There is no doubt that the game resources of the country, which include game fish, can be maintained against any reasonable drain, and can also be developed as an important attraction to sportsmen. (A recent development was the establishment in 1946 of a forest and game protection service in Mackenzie District of the Northwest Territories, with headquarters at Fort Smith.)

The country is well supplied with resources of coal, oil and running water for the production of power. As industrialization progresses, no doubt these resources will be developed.

Undoubtedly there will be many who will want to go into this area when the war is over, for the development of some of the other resources which I have outlined. You may therefore expect me to make some predictions as to the population which can be carried by the Canadian section of the great northwest. Here one enters the ? of speculation, though an appraisal of the natural resources of the region gives some basis for an opinion on its population possibilities. The Precambrian country east of the Mackenzie Valley never can be expected to maintain a large permanent population unless there are large mineral developments in that area. Exhaustion of mineral resources elsewhere, or increased demands for minerals, should lead to widespread exploration and discoveries in the north, but it is impossible at this time to predict the extent of developments arising out of such discoveries. One can, however, visualize centres of population throughout this region based upon mineral development. The section west of the Mackenzie

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River, including the immediate river area itself, offers somewhat greater assurances of sustained population. The soil is better, the climate is more moderate, there is a heavier forest cover, but most important of all, here lie the greatest possibilities of oil development that we have in Canada. In the southern portion of this area are also the greatest opportunities of agricultural expansion.

Of a different type are the industries that may support a population on the Pacific watershed. Here we have a climate more mild than that in eastern parts of the continent many degrees farther south, supported by an ample rainfall. Growth is relatively heavy and rapid, and such agricultural areas as exist are capable of supporting a somewhat concentrated population. Here, too, are definite industrial possibilities—lumbering and the manufacture of paper, for example, and the processing of the valuable crops of the sea. Here also are great possibilities for metallic mineral and power developments. It is reasonable to hope that in process of time this area will support a density of population comparable to that now found in Norway.

On the whole, I think it would be optimistic to look for a great rush of settlement into Canada's Far North, as seems to be anticipated in some quarters. Comparisons with an area like Siberia, for example, are likely to be misleading. Although Russia cannot be described as an over-populated country, the density of population there is about six times what it is in Canada, and other conditions, such as the opening of the Arctic sea route from east to west, which do not exist here, have tended to press the fringe of settlement farther north. Certainly Canada's North will support a larger population than at present, and in many localities, a very much larger population, but I think it safe to say that the density of permanent population north of the fifty-fifth parallel is not likely to be as great as that farther south. My opinion on this matter is influenced by our experience with other roads pushing out through our virgin territory. Those most successful, such as the Temiskaming and Northern Ontario Railway, had the benefit of traversing mineral-bearing territory, and traffic associated with the mines was the principal source of revenue. Farming developed later, wherever there was suitable land. Those roads or parts of roads which did not

tap the mining areas were not so successful or were much slower in developing population.

The conclusion that I arrive at, therefore is that in the opening up of this new Northwest the mineral resources are of prime importance, and will constitute the spearhead of development. Agriculture and other primary industries will follow wherever conditions are favorable.

I have been speaking of permanent population, but there is another aspect, in which the picture may differ. That is with respect to temporary populations; I mean the population which moves in for a few days or a few weeks to see the scenery and enjoy the freedoms and contacts of the North. Few countries have such attractions to offer, and few have such unmeasured possibilities of development along that line. The Alaska Military Highway, and other trunk channels which may be driven through the wilderness, will, in time, become arteries for motorized travel, and the great water routes of the Mackenzie River provide other means of entry, so that tourists and those of adventurous mind may respond to the insistent lure of the North. The air routes also will bring many people in response to this lure. For there is such a lure. Explain it how you will, men—and also women—who have once tasted the life of the north never seem to be fully satisfied elsewhere. There is something inherent in the human heart and the human soul which responds to the appeal of the Wilderness, and which no other appeal can satisfy. Here, then, lies the greatest unspoiled recreation land on the continent today. With the return of peace, tourist travel, either along the highway or by air, or along its great rivers, will draw many people to Canada, and the great Northwest will have its share. This stream, however, as I see it, will not reach full flood immediately the war is over because the highway that will be handed over to the Canadian Government will be a military road, and not a tourist highway, and the other routes need developing for tourism. Much improvement in the road will be necessary before it becomes a highway, such as tourists have been accustomed to on this continent and a little time must elapse before provision can be made for fuel supplies and accommodation. (See previous note concerning the control, maintenance and use of the Alaska Highway.)

Those of you who have been patient enough to bear with me thus far must be aware that I am dealing with an immense territory concerning which in many respects information at present available is by no means final. We are seeking, and obtaining, more information every year; I might almost say, every month. Field investigations, conducted mainly by the Department of Mines and Resources—which include forestry and wild life—are designed to uncover and establish a factual picture of the whole country. Extensive mapping work, involving aerial photography, is being carried on. Many Canadian government experts are in the field at this moment, assembling the information which will take the guess-work and much of the hazard out of the future development of this country. Just as the map of Canada has for a century been unrolled westward, so now it is northward that “the tide of Empire takes its way”. The same racial stock which has carried the flag around the world will also carry it to the farthest north, and we may be sure that they and their sons and daughters will write a record of achievement not unworthy of the race from which they sprang.

MACHINERY ARRIVES FOR TANTALUM REFINERY

Dr. Daniel Gardner of the Tantalum Refining and Mining Corporation has announced that the machinery and other equipment for the tantalum refinery his company is establishing in Edmonton has arrived and arrangements are being made to proceed with the installation of the same.

He states that the company expects to be in operation during the early summer refining tantalum ores shipped to Edmonton from the company's property in the North. E. S. Clarry, former Alberta Trade Commissioner at Toronto has been elected president of the company. Erection of the plant will be supervised by Donald Parkin of Garfield who it is stated is an expert on the construction of electronic machinery.

And now you tell one. A taxi driver, caught a duck on the highway. The duck was flying along the road the taxi was travelling, and all the taxi driver did was to reach out through the window and catch the duck with his hand. No the taxi was not speeding—nor was the duck. Who said Paul Bunyan was dead?

JUVENILE DELINQUENCY

A most solemn and praiseworthy ceremony was held in the Masonic Hall recently when the Premier of Alberta and the Minister of Education participated in the handing out of “Gideon” Bibles to the school children of Alberta.

Naturally such a step should have been a most gratifying influence on the moulding of the lives of the younger generation towards better citizenship.

However, that example set by these two gentlemen would have much more value if it is the first step of the government towards getting out of the hijacking methods of liquor control as practiced today to raise more revenues under the heading of liquor profits.

Liquor, and the ease with which even 'teen agers can obtain it, is perhaps responsible for quite a lot of the juvenile delinquency rapidly spreading across Alberta. Its dispensation in the hands of the government does not go well with the dispensation of Gideon Bibles. Perhaps the premier will study, now he has got the Bible in the schools—how he can keep the bottle out.

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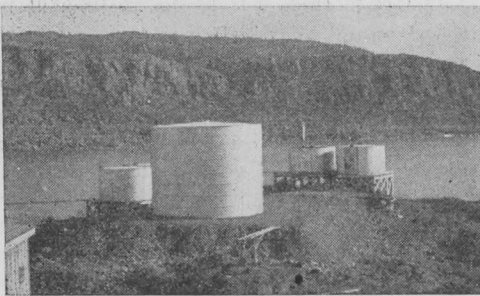
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GOLD MINING IN '46 STILL OFFERS EXCITEMENTS

GOLD! It has been quite a spell since the vibrating cries of "gold" fired the spirits of our early pioneers, but as always the precious nuggets are still inspiring the ambitions of men and women everywhere. Although each golden speck taken from the inners of Mother Earth reflect years of insolation and discouragement, there are always some who will brave these hardships in the hope they'll "strike it rich".

Twenty years ago a young mother, Mrs. Margaret Hunter, her seven-year-old daughter and her "gold-panning" partner, Dewey Burnett, mushed from north of Nome to Fairbanks, Alaska, on their first trek of a long journey in search of the yellow metal.

Today Mrs. Hunter and Dewey Burnett are still searching the mountain streams of Alaska in their persistent quest for gold. Now, stuck away amidst the isolated wilderness of our northern territory, 125 miles northeast of Fairbanks, these two people are still "panning"—on a big scale.

During their first years of operation, Mrs. Hunter and her partner worked by hand and spent many gruelling months slowly adding equipment to their enterprise. By 1940 they had produced enough gold to make a down payment on an Allis-Chalmers crawler tractor equipped with a bulldozer. Lady Luck was reluctant to co-operate, however. War encompassed the world, and the mining of precious metals was soon declared non-essential. When it became apparent that suspension of operations would prohibit payment on the tractor, the resourceful Margaret Hunter wrote a note to the WPB explaining their plight. To her great surprise, permission was soon granted them to resume operations. But the government did not give them a priority on which to purchase necessary materials and supplies. They were prohibited from hiring men who might otherwise be engaged in war work. So the next four years were difficult to say the least and really taxed the partners' resourcefulness to the limit.

During the war years the Diesel tractor was used largely for preparatory work and this spring a large area was ready to be mined. A forty-foot sluice box 18" wide was set up on a nearby creek. A 3" movable nozzle fed by a pipe from a point further up the creek furnished water that

washed the gravel which the bulldozer pushed on to the steel apron at the mouth of the sluice box.

After the gravel is pushed onto the apron, it is washed down through the box by the combined force of the nozzle and current of the stream which is also channeled to the mouth of the sluice. The swiftly flowing stream of water rolls even the big rocks over and over, thoroughly washing out the gold which by virtue of its weight quickly settles to the bottom of the box. Here it is caught between transverse steel-faced strips arranged in the bottom of the box at intervals of about 4½ inches. These "rifles," as they are called, are faced with rubber which seems to withstand the pounding of the rocks better than steel. Hundreds of thousands of cubic yards of the gravel must pass through the box before each clean-up when the gold is removed from the box.

Quite naturally, the clean-up is an occasion of considerable interest and excitement.

After the gravel passes over the rifles, it slides out onto the ground where an Allis Chalmers bulldozer pushes it out of the way. These "tailings" are often carried back to the apron to be washed over again, because usually there is still much gold left in them. It is the excitement of the clean-up" that incites folk to bear with the trials that go with mining. At this time each section of "rifles" is removed, washed and set outside the box, leaving an accumulation of several cubic feet of rock, gravel, sand—and gold! All of this material is shovelled up toward the upper end of the box and spread in a layer a few inches thick. Then a baffle is nailed across the floor of the box about midway in its length. A small stream of water is then admitted to the box and coarser rocks are

TOP—

H.D. 10 Allis Chalmers Bulldozer—aid to gold mining—pushing gravel into sluice boxes.

MIDDLE—

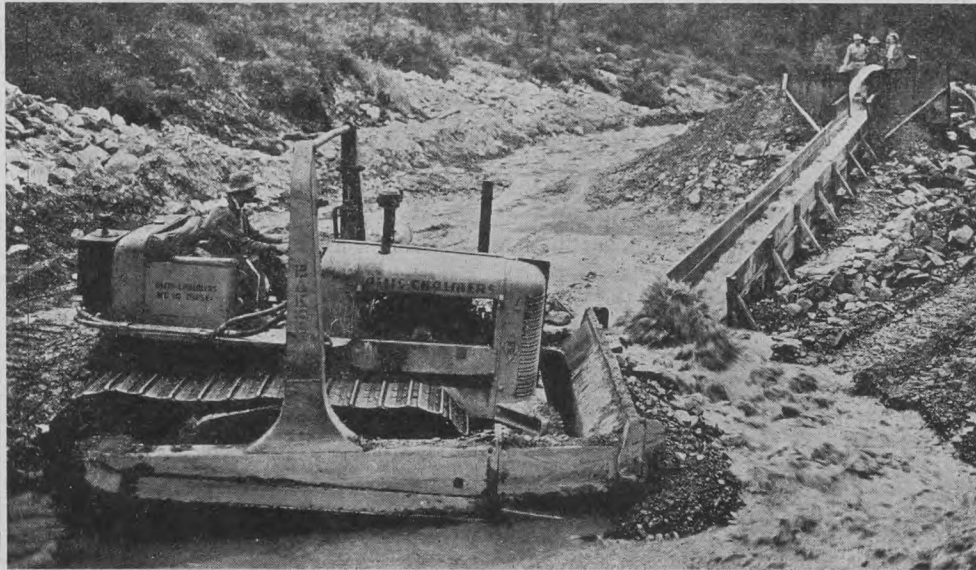
Mrs. Margaret Hunter, holding a nice pan of gold, the result of the "clean up."

BOTTOM—

As the tailings pile up at the outlet to the sluice boxes, the HD 10 pushes the debris out of the way.

Waterous Limited, Edmonton, are distributors for Allis-Chalmers products in Northern Alberta, N.W.T. and Yukon.

"BULLDOZING" GOLD FROM MOTHER NATURE



scraped off the top with wooden paddles and allowed to roll down the box. Continual agitation with paddles washes the sand and gravel away until finally small nuggets appear at the mouth of the box.

Gradually a bright golden band appears at the upper end of the sand. It is fascinating to watch the width and brilliance of this area increase with the washing. The last "clean-up", Mrs. Hunter revealed, netted them well over \$2,000. That was the exciting climax to laborious weeks of preparation during which Margaret Hunter paced production with her remarkable stamina.

It is not uncommon to find Mrs. Hunter operating the "crawler", because she is really a skilled tractor operator. While Mrs. Hunter is always prone to lending a strong shoulder at the mine, her distaff interests are typical of those of other women. She cooks for the crew, keeps house in her sturdy log cabin, and always finds time to tend a precious little garden not far from the house. In winter she makes parkas, mukluks and other fur garments which as she explains keeps her in trim as an able seamstress. Undoubtedly, she is one of the best seamstresses in the north and in spite of her natural modesty, Mrs. Hunter admits that if anything ever happened to the mine she could always make a living sewing.

The mine can be reached only by airplane from April to October. During the remainder of the year, the trip can be made only by dog team or tractor over the frozen tundra and rivers. All fuel and supplies are brought in during the winter, so that no time is wasted during the short 70-day operating season.

Once or twice a week a plane flies over the camp in good weather and will land in response to a prearranged signal. The miners can't afford to leave during the short season, but if supplies are needed the pilot finds their order in a fruit jar on the air strip. When the strip happens to be soft from rain, landings are impossible, so the miners are cut off from the outside world except for the radio.

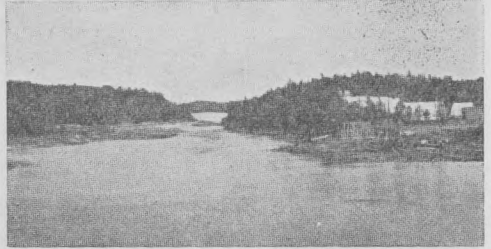
She had stalled the car—issued a distress call to the nearest garage. His brief inspection was "out of gas".

"Oh," sighed the lady, "I am so glad that's the only trouble. Do you think it would hurt the car if I drove it home on an empty tank?"

Snare River Power Site

Plans are well underway for the construction of the Snare Power Site, which is being constructed by the Dominion Government and is designed to furnish ample power to the mines in the Yellowknife and Indin Lake areas.

Truck loads of equipment, it is announc-



Site of the Snare River Power Project

ed are shortly leaving New Liskard in Northern Ontario. This equipment is being taken by road to Edmonton and thence on to Grimshaw, Alberta. From this point it will be taken over the present winter truck road to the Yellowknife and from there to the power site at Snare River. It is expected that the plant will be ready to deliver power sometime in 1948.

A most interesting story of Yellowknife progress has recently been published by Wesley T. Davidson and Co., 330 Bay Street, Toronto, who are sponsoring the issue of 50,000 shares in Dunn Yellowknife Mines Ltd., which has acquired the Soll X group of claims situated on the east shore of Yellowknife Bay about 4 miles southeast of Yellowknife. This booklet is well illustrated and gives a most complete account of the Yellowknife today. Copies can be obtained free of charge on application to the above address.

And then there is the one about the sculptor who put his model to bed and chiseled on his wife.

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De STAFFANY TANTALUM BERYLLUM MINES LIMITED

In December last, Mr. J. T. Burton, B.Sc., Mining Engineer, Yellowknife, inspected and reported upon the mining prospects and operations of De Staffany Tantalum Beryllium Mines Limited who are developing tantalum and columbium prospects on their 21 claims situated on the North Shore of Great Slave Lake, seventy miles east of Yellowknife, with mill and camp situated on the lake shore, where the ore can be loaded on barges and transported by water and rail to world markets.

Company officials state that 1946 has seen further activity in the property with continuation of underground operations in the Moose Dyke, treatment of some ore at

of the shaft which combined with the prominent elevation, to make the shaft site a logical selection. He agrees that a proper approach has been made to the development problem, which by testing the dyke at superficial depth by underground work will provide material to pass through the present 25 ton a day mill. He adds minor additions to this electrical driven installation would fit it for the production of comparatively clean concentrates. Two diamond holes put down have indicated the dyke to be slightly over 40 feet in true width and also shows that the tantalite-columbite exists at a vertical depth of 25 feet.

A number of very large crystals some be-



Mill and part of camp at De Staffany Tantalum Beryllium Mines Ltd., on Great Slave Lake, N.W.T.

the mill which has a capacity of 25 tons a day and prospecting and opening up of other showings.

In connection with these operations Mr. Burton states that the principal operation was on the Moose Group of 15 claims, where two strong pegmatite dykes exist and upon which is the camp capable of accommodating 20 men and the 25-ton pilot mill. He adds the most interesting display of tantalite-columbite is revealed for a length of nearly 75 feet midway along the north section and about 20 feet from the west wall. Numerous coarse crystals were seen at this location, the largest of which was approximately 3 inches by 1½ inches. It is the downward extension of this particular rich concentration which is the objective of the underground work planned from the bottom of the shallow shaft which has attained a depth of 68 feet below the collar which is located 70 feet from the extreme east edge of the bulge in the east wall. Several other concentrations of tantalite-columbite were noted in the vicinity

ing between 10 and 15 pounds in weight, whilst one consolidation or crystal was 8 feet in length and 3 feet wide weighing some 600 lbs. were also revealed by blasting at another point on the dyke. Still another concentration exists in the south section of the dyke. This has been opened up and displays a length of 150 feet with a 30 foot width. Samples from this occurrence tested by the Department of Mines at Ottawa gave 11.2 pounds of concentrate per ton of ore.

Mr. Burton also reports very favorably on the other dykes namely the Best Bet Dyke, and also on the Tan Group which is situated 4 miles west of the mill and about 2 miles from the Best Bet Dyke. He states that by a narrow open cut and drifting on the Best Bet Dyke, at least 250 tons of high grade ore could be obtained almost immediately in addition to further information as to later possible development. Tests of this ore showed it to contain (Dept. of Mines, Ottawa), 22 per cent heavy minerals, with a probable Tantalite and Colum-

bite content of 53.78 per cent and tin oxide content of 20 per cent. He estimates 15 tons of concentrates might be obtained from this operation to a depth of 20 feet. He says the Tan Group showings are very similar to those on the Moose Group. A number of shallow pits blasted into the dyke show essentially the same minerals. The Tantalite-Columbite and cassiterite are thinner than in the other dykes but appear more evenly distributed. Ottawa tests of samples submitted returned a calculated concentrate of 6.25 pounds per ton, which when analyzed gave 66.70 per cent tantalum-columbinum pentoxide and 15.96 per cent tin oxide. In conclusion Mr. Burton recommends continuation of present underground operations on the Moose Dyke. Open cutting on the Best Bet dyke to secure 250 tons of ore from an area of rich concentration and metallurgical investigation with test shipments of concentrates to determine markets for the product.

According to officials of the company enquiries have already been received from companies refining rare element minerals, such as the company is producing, as to the date when the company will be able to commence shipments of concentrates to purchasers.

He was a recruit from the back bush. He was about to be fingerprinted as part of the examination.

"Wash your hands," said the Doctor.

"Both of them?" asked the recruit.

"No, just one of them. I want to see how you do it!"

OVERHAULING TRANSPORTATION RATES

The Hon. W. A. Fallow, Minister of Highways in the Alberta Government states that the time has come for the complete overhauling of freight charges in connection with railway and other transportation in Canada. The recent reduction in the freight rates from Edmonton to Waterways is a glaring example of how the railways for many years have mulcted northern shippers and there are many other instances where similar conditions exist in the railway freight structure of Canada. But he does not go far enough in his arguments. The time has also come for Alberta to thoroughly overhaul the methods by which road construction is also carried out. The provisions of good highways capable of carrying tonnage and acting as real competition to the railways would do much towards getting equitable freight rates across Canada. He has the responsibility for establishing that Highway system in Alberta and perhaps he might be well employed in attending to that phase of transportation.

GOLD STRIKES

Two new gold strikes have been recorded in the North. One is situated near Johanson and Asitka Lakes near the headwaters of the Skeena River in Northern B.C. The other is on Nanson Creek near Carmacks in the Yukon. It is stated that both finds have good free gold samples. It is also stated that there is some activity on gold prospects in the vicinity of the White River, Yukon Territory.

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AND HE DID NOT CLIMB A TREE

Lots of things can happen to the nimrods seeking the big ones in the fall of the year, when they bet the Government of Alberta five dollars in the form of a license fee that they can shoot a moose, a deer, an elk and a caribou, male only. Especially when the snow begins to get deep.

Hunters yarns are many and varied. Some seem like the tall stories concerning that great woodsman, Paul Bunyan, the king of them all, as lumber jacks and trappers get around the campfire and listen to the latest.

However, here is one that caused a well-known Edmonton big game hunter, of many years' experience in the bush, a long half hour of anxious moments whilst he was on the trail of the big ones.

It happened to my friend Wattie during the recent open season. He was hunting with O. S. Martin and the editor of this magazine. They were out in the hills not far from the E. B. Johnson camp at

preliminary to entering the bush. Like every good hunter he was travelling slowly, for that is the way to get a glimpse of the game. Just as he left the railway tracks and had crossed the Embarass River, he saw an elk on the side of the hill, some 500 yards away. Long shot? Yes, his first nailed the elk, but he had to use more shells before finally getting him. By this time he had only three shells left.

His first kill was early in the short winter day so he kept on going after blazing a trail into where the elk was lying. A couple of hours afterwards he saw two moose—one was a big fellow who even at 400 yards looked as big as the side of a house. His companion was a little fellow. The big one had the horns, but the little one had the best meat, and it was meat that Wattie was after, so he pulled down on the little fellow. Once again he downed his target and went over to it. It had taken two of the three shells to do so. He had only one left.

The moose he had downed was not yet dead. He was undecided what to do. Whether to finish the wounded one or save his last shell. In the meantime the big bull had left the country, so he thought, and he decided to put the one on the ground out of its misery.

The shot however, was not a well-placed killing shot and the wounded bull seemed no nearer the end. There was only one thing to do and that was to wait till its head went down. After about a ten-minutes' wait, the bush began to crackle and up the hill travelling in high gear, came the big bull straight for Wattie, who yelled, "Where are you bound for." The sound of his voice brought the old fellow to a halt within a very few paces of Wattie.

It was not a very comfortable spot to be in with an empty 30 U.S. rifle. For nearly ten minutes the bull stood watching Wattie, who decided that he had better look for a tree to climb. Taking his small hunting axe he trimmed the lower branches of a pine nearby, leaving the limbs he thought would bear his weight—still watching the bull and the bull still watching him.

The dying bull by this time had dropped his head, so going up to it very quietly, but still watching the other bull in case he



A Seven-point Elk



800 Pounds of Real Meat

Embarass. Johnson, a well-known old timer of the Edson district, has built up a lucrative tie, lumber and mine prop business where he employs some 50 men. The main camp is located on the railway tracks at Embarass on the Coal Branch of the Canadian National Railways where he has a sawmill with cutting camps distributed over a nine mile area.

The three hunters totalled up some 205 years in age, but all could still hit the trail and get 'em. This time "hitting the trail" meant wading through some 14 inches of snow—tough work? Well, try it for a change to the cement sidewalk.

It was a bright and frosty morning as Wattie walked down the railway track

took a notion to charge, Wattie gave it a blow between the eyes. To his surprise, the head came up and the front feet shot out as it tried to get up again. As he tried to get up, Wattie gave him another blow, but the axe glanced off one of the horns, flew out of his hand, and he was left minus even the small axe he carried. He felt that his luck had ended for he had not even an axe should the big one, which was still watching him, charge.

The big one was facing him as bold as ever, so Wattie swinging his cap around his shoulders started yelling at the bull at the same time walking towards him over the few intervening paces. This seemed to be too much for the bull who at that time decided to leave. Turning like a flash he soon disappeared over the hill and Wattie was not at all sorry to see him go.

Wattie says that in 1927 he saw a wounded bull moose, which was unable to get away, charge his brother, but had never seen an unhurt bull pull a "Zinny" like this old fellow did. So the tree was not needed and Wattie headed for camp which was quite a few miles away and says that the next time he goes a hunting he will take plenty of shells. He is an old experienced hunter having got his first moose some thirty years ago and has never missed a hunting season since, with only 1942 being a blank year as regards getting a bag . . .

B.C. Chamber of Mines Holds Annual Meeting

The British Columbia and Yukon Chamber of Mines held its thirty-fourth annual meeting in Vancouver recently. The President, Mr. A. E. Jukes, in his annual report emphasized the need of more consideration being given gold mining as regards reduction in taxation. He also showed how the production of gold had saved the day for Canada during the years of depression and how this gold production had enabled the Dominion Government to meet its financial obligations abroad. He said that since gold was first discovered in Canada, it had produced no less than 95,000,000 ounces valued at \$2,786,000,000. In 1941, the last year of gold mining during the war period when such mining was forbidden under war measures Act, production amounted to well over \$205,000,000. In one year some 32,500 men were employed

who earned in wages the sum of \$62,000,000. An additional \$35,000,000 was expended on equipment and supplies.

During the war years gold production dropped off owing to war measures act and only \$102,000,000 was produced per year.

He pointed out how important it was for people inclined to risk money in exploration for minerals to be in a position to get real returns for their money when a strike was made.

The Manager of the Chamber of Mines, Mr. Frank E. Woodside, who has been at the helm of the Chamber for practically its whole career, reported on current aspects, stating that the Chamber now had 800 members who were not only from British Columbia but also from many other places in Canada including the N.W.T.

He emphasized the work undertaken in the form of courses for prospectors, up-to-date mineral exhibits, maps and reports, contacting employers with employees, arranging space for use in consultations between financiers and the prospector as to mining assistance, and many other services.

Mr. Woodside is well known to the whole mining fraternity of Canada. For years he has been regarded as the real friend of the prospector on whose behalf he spares no effort to extend the help of the Chamber of Mines, and what is more important he has the benefit of years of pioneering mining experience behind him. He says mining is on the up grade in B.C. and the Yukon and the Chamber recognizing that fact is taking steps to see that its work is extended to take care of this increased demand.

The mouth organ was claimed by three soldiers and the sergeant decided to arbitrate.

"I'll play a tune on it," he said. "You tell me what the tune is, and the one who's right gets the mouth organ."

A weird medley of sounds followed, and guesses were made.

"I think Alf's won," said the sergeant. "He was nearest with 'Roll Out the Barrel.' What I was playing was 'As Pants the Hart for Cooling Stream!'"

"So you like being in the police force?" said the old friend to the former shop assistant.

"Yes, I like it because the customer is seldom right."

Freight Rates To The North Are Reduced

Freight rates over the Waterways Branch of the Northern Alberta Railways have been reduced by nearly fifty per cent, notwithstanding the protests made by the railways that this could not be done profitably. The Board of Transport has thought otherwise and so shippers to the North can look for reduced transportation costs, which also means that more mines can get into operation in the North.

It is strange that this reduction comes just prior to the completion of the northern highway from Grimshaw to Great Slave Lake which will no doubt become a very real competitor for the railways to take care of in future years. It goes to show that competition is the greatest leveller of them all when it comes to charges for any kind of service. Edmonton merchants might well ask what was the reason that impelled the Alberta and North West Chamber of Mines to hold off for many years an official application to the Board of Transport for reduction of rail rates between Edmonton and Waterways?

These reductions could have been obtained years ago if in the past, this official body had taken such official action as regards railway freight rates between Edmonton and Waterways.

NEW FISH COMPANY FOR GREAT SLAVE LAKE

Gateway Fisheries Ltd. of Edmonton are the latest to enter the fishing field of Great Slave Lake. J. Ruckman of Hay River is agent for the company and is purchasing fish for the company. He also has 25 men employed working out from camps near Mirage Island and Wrigley Point. It is expected that some 500,000 lbs. of fish will be exported this winter over the Grimshaw Road.

MINK RAISERS GOING NORTH

It is stated that some Alberta mink farmers are contemplating moving their fur farms to Hay River. The reason for the move is due to the excessive cost of raising mink in Alberta owing to the cost of horse meat and other products. They are stated to be considering Hay River as a location where a plentiful supply of fish is always to be had.

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IMMIGRATION

Dominion Government officials have suggested an immigration policy for Canada to increase its sparsely scattered present population especially in the west. They suggest a campaign to get some 14,000,000 new Canadians.

Looking at such a proposal hurriedly many will say it is impossible to bring more people to Canada without creating unemployment amongst the present citizens, overlooking the fact that more population means greater home markets and the gradual elimination of having to export in order to prosper.

Looking at it from the point of view of Alberta, it can be plainly understood that the great drawback to the proper development of Alberta is lack of population. Alberta could absorb at least as many millions as it has thousands today—an increase in population from 800,000 to 8,000,000.

More population creates more home markets, more wealth and industry but it is admitted that the class of immigration is important.

With its few objectionable features, the immigration policy followed in the early days of western progress was a good one and the years of progress since that time has emphasized its value. It is impossible to develop without people. Alberta needs population.

In Europe millions are on the verge of starvation and the eventual result of such starvation will mean more devastation throughout the world. Canada is doing its share to help this situation by exporting foodstuffs to Europe. It cost real money to carry this stuff abroad and more important still it is almost impossible to export in sufficient quantity. During feed shortages occurring on Canadian ranches in the early days, the cattle were driven to the feed and not the feed exported to the cattle. This system saved the lives of thousands of animals. It also saved the rancher from going broke. It would be a good plan to bring the people to the feed, instead of transporting it thousands of miles in insufficient quantity to either feed starving peoples or save the exporters from going broke.

"Great balls of fire," I'll never try that again," shouted the little moron as he slid down the flag pole.

Peace River

(Report of Committee on Resources and Railways.)

Land suitable for settlement:

North of Peace River—

Alberta	1,650,000 acres
B.C.	1,150,000 acres
Findlay Forks	600,000 acres

South of Peace River—

Alberta	1,750,000 acres
B.C.	850,000 acres

Grazing Lands

North of Peace—

Alberta	500,000 acres
B.C.	900,000 acres
Findlay Forks	200,000 acres

South of Peace—

Alberta	200,000 acres
B.C.	500,000 acres

Coal

Carbon River and

Hudson Hope, 1,000,000 tons per annum—8-ft seams of high grade coal—14,700 BTU.

Forest Products—300,000 tons.

Power Possibilities

Rocky Mountain (Peace River Canyon).

Three dams—one at head of canyon, 100 feet high and two 80 feet high lower down the canyon will deliver a minimum of 153,000 H.P., 210,000 for eight months in the year, or 283,000 for six months in the year; 153,000 H.P. can be developed at cost of \$130 per H.P.

SAVE THE BULLS

The hunters lament these days is that when he hunts the big ones he first bets the Government \$5.00 (raised from \$3.00 under Social Credit), that he can get one with horns. Then he has to look three times to see whether it has horns or not as it flits across his sights, and then he has to produce it whole at the shipping point before he can even eat it.

"Yes," said one hunter, "lots of game around—saw plenty without horns, but none with them." That is the story of today under our Social Credit game laws. The bulls and bucks are being shot out so that shortly many a cow moose will listen in vain at breeding time. With all due respect to the hundreds of official chair warming game administrators, wandering game wardens, self appointed wardens and game associations, there should be an open season on cows every few years and a closed one on the bulls.

Portable Mining Plant For Prospecting

A wartime development in Nova Scotia that has proved to be of continuing usefulness was described recently by J. P. Messervey, of the Department of Mines, Halifax, to the Canadian Institute of Mining and Metallurgy at the annual convention in Ottawa. In a paper entitled "Design of a Portable Mining Plant," Mr. Messervey outlined the means whereby a complete small portable mining plant, suitable for rapid installation and removal, had been put on wheels and used at successive mineral deposits from which "strategic minerals" were sought. The plant was shown to be so convenient and economical in Nova Scotia that the detailed description is now made available to others who may find it equally useful.

The portable mining outfit consists essentially of diesel-driven power units, equipment for hoisting, sinking, drifting, pumping, and ventilating, crushing and screening, and the trucks and trailers to transport these units. The necessary shop equipment and buildings for sharpening drills, repairs and replacements, as well as portable dwellings for the crew are included in the outfit. As mineral deposits are seldom found near good roads, the tractor used as a part of the motive power is equipped with bulldozer and grader.

Teacher: "What is the difference between vision and sight?"

Pupil: "When our Mabel goes out in the evening she's a vision; when she gets up in the morning she's a sight."

He: "I'd certainly give anything to know why God made you women so beautiful and yet so dumb."

She: "That's simple. Beautiful, so you men would love us, and dumb so we could love you men."

He: "You know, dear, marriage is a serious business. When we are married you'll have to cook my meals."

She: "Yes, darling, and you'll have to eat them."

Miss Pretty: "Why do you always insist on saying that homely girls are more intelligent than attractive ones?"

Miss Plain: "Darling, they have to be."

HUTCHISON HEADS CHAMBER OF MINES

David Hutchison, manager of the MacKenzie river division transport department, Hudson's Bay company, was elected president of the Alberta and North West Chamber of Mines, at a meeting of the chamber executive. He succeeds Dr. John A. Allan of the University of Alberta geology department. This meeting followed the annual business session of the chamber held recently.

Other officers named were: first vice-president, W. J. Dick; second vice-president, S. R. Stevens; third vice-president Charles E. Campbell; auditor, H. O. Patrinquin. Campbell Fraser was re-elected treasurer. Appointed to the directorate were J. M. MacArthur, representing all railways; Capt. W. S. Hall, for northern transportation; F. A. Meyers and J. O. Budd, for wholesale hardware. W. A. MacDonald, as a past president, also will serve on the directorate. Two others will be named later.

The new president is a graduate in engineering from Queen's university and is past chairman of the Edmonton branch, Engineering Institute of Canada. He came west to Edmonton from Montreal and is in his ninth season as manager of northern transportation for his company.



TOKEN OF SERVICE

In honoring EATON veterans, Mr. John David Eaton said, "It is our desire that each of you should have from the Company some lasting token in recognition of your service, and for this purpose we have had designed a gold signet ring incorporating the General Service device, for the use of which we have received the kind permission of the Department of National Defence. For those who served in the Auxiliary Services, a very similar ring with a slightly modified design has been prepared."

Railway Freight Rates

The battle is on. The railways claim they cannot operate at a profit unless they increase freight rates. This increase would apply most particularly, as to consumer expense, in the west, for it is from the west that the dearly loved "long railway haul" comes. It is in the west that any attempt to establish competitive industries with those of Eastern Canada is sabotaged not only by eastern competitors but also by the railways. The latter do not want industries which would manufacture goods for local western consumption, such would be disastrous to the "long haul" even though it would spell cheaper consumer costs. The Eastern manufacturer looks with dismay on any attempt to break the goods monopoly he holds over the west. So the western picture today is one similar to what Hitler had in mind for the conquered nations of Europe. The East wants the west to remain an agricultural domain occupied by hewers of wood and haulers of water, with the East being the "superman" supplying the "peasants" with clothes and other essentials.

Too long has the west been the tail of Canada's dog only to be wagged at the command of eastern manufacturers and railway interests. Too long have we had to listen to the camouflage of railways operating with huge deficits, when as everyone knows that increased railway facilities outside of Canada's 250-mile railway strip will add population and railway tonnage in short order so that freight rates would be decreased, instead of increased, through the momentum of greater business offering.

The present trade routes of Canada, namely those running east and west, are more or less artificial in as much as they go directly contrary to the old natural trade routes of America. In years gone by before the advent of the railways, western trade went south and east following the great waterways of the continent. The U.S. Border was the obstacle which prevented the railways building in that direction. There is no competition in the Canadian railway business of today—it does not matter whether you use the Nationally owned railway or the C.P.R.—you pay the same rates—you get the same service—they both act together, in fact many must wonder why both should not be under

one management. It is a different story south of the U.S. Border, there railways do compete with each other and the public benefits accordingly. No part of the United States, however remote, has to look far for railway connection and reasonable rates. These United States railways almost touch the borders of Canada in the west and no doubt are looking with interest as to the opportunities existant for extension into Canada, if and when they can do so. Everyone knows that in the East the Canadian Railways actively compete with American railways on American ground. Why cannot American railways also compete with Canadian railways on western ground? This is not secession talk—it's just an idea that the way to get lower freight rates is to get competition to a monopoly. The western provinces would perhaps create quite a stir in railway and eastern circles if they one and all agreed that the extension of an invitation to American railways to enter the railway business of the west would answer the question of higher or lower freight rates.

"Never mind the expense said the Scotsman, "Give the canary another seed."

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Mining In The Yellowknife

Over 320 companies are operating or have been incorporated to develop or exploit some 22,000 claims which have been staked in the Yellowknife area.

Nearly all these companies have been capitalized at an average capital of some \$3,000,000. They represent a total capitalization of some \$960,000,000.

That is a lot of money to pay dividends on, especially if the fact is taken into consideration that perhaps out of the 320 companies not more than 10% will make mines.

The Yellowknife is a great mining prospective area. In fact, it can be safely characterized as being a permanent gold mining camp from which real mines will be developed and placed on a profitable commercial basis, but the hysterical paper financing attending the recent mining boom will not add to the creation of public confidence or participation of the public in helping to finance that development.

There is plenty of money available today

for the development of prospects of merit, there being enough well financed and experienced mining companies willing to take over and develop ground of promise. They, however, have to be shown values. "They are from Missouri." The public only enter into the picture on the basis of taking a flyer in the market, which fluctuates from day to day—in fact almost, from minute to minute, as the stock is played with amongst the exploiters. Think it over. Why should a mine or even a prospect be worth a few cents today—more cents tomorrow and perhaps none later on? The answer is the so-called method of creating markets for mining stocks.

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Eastern Truckers Use Alaska Highway

Seven large size van trucks now form the fleet of two Americans—Herda and Sinclair of North Dakota. This fleet of trucks is the commencement of a fresh vegetable and other perishable service from the States to Alaska. Recently the fleet left the U.S. carrying over \$100,000 worth of supplies in addition to 1,600 gallons of gas. The convoy also carries all supplies necessary to make it self contained whilst on the road. North Dakota advices state that these trucks will go to Alaska via Montana-Great Falls—and up through Alberta over the Calgary-Edmonton Highway to Dawson Creek, B.C., where the Alaska Highway proper commences.

An Executive Council For The North

The recent appointment of a new Commissioner for the North West Territories seems to indicate that the Ottawa Government is still determined to administer the huge areas of the North by means of civil service appointees located at Ottawa some 3,000 miles away. It has been suggested that the best form of Government for the North would be the election or appointment of an Executive Council, similar to the one that administered the prairie provinces before autonomy was granted to them.

Such a Council, with some of the members being drawn from local residents of the North, is no doubt the best and most proper form of administration for the North. To this should be added a representative in the House of Commons at Ottawa for the North. This does not mean that the present member for the Yukon, who represents less people today than are resident in the territories, should have his district enlarged to include this huge area.

The asylum had just been presented with a new swimming pool for the use of the patients.

"How do they like it," the warden was asked.

"They're crazy about it. We can't keep them out of it. They'll like it even better when we put water in it."

BOOZE AND THE GOVERNMENT

The Booze commissioners of the eight or is it nine provinces of Canada, have met in solemn conclave in the City of Montreal, the home of the big liquor interests, and are shortly, it is stated, to announce that the war quality of liquor is to be maintained. That is, the usual amount of water is to be sold at high jacking prices and called liquor. It is a true saying "Place a beggar on horseback and he will ride to Hades." This seems to apply to the liquor dictators of Canada who are called Liquor Control Commissioners. These gentlemen evidently have only one or two ideas, firstly to obey their masters' voices and then to high jack the consumer for all the traffic will stand. If liquor is still to be sold in Alberta by this Christian Social Credit Government, in order to save its face, it should announce a proportionate reduction in prices according to the quality and actual value of the liquor it sells.

Lecturer: "Can anyone give the derivation of the word 'auditorium'?"

Listener: "Yes. From the word audio, hear, and taurus, bull. A place where you . . ."

Lecturer (interrupting): "That will do."

The bride and groom were at the dinner table.

A flip young waitresses asked: "Would you care for some honeymoon salad?"

"What is it?" asked the groom.

"Just lettuce alone," replied the waitress.

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ICE IN CHURCHILL HARBOR

An old sea captain once remarked when talking about the Fort Churchill Hudson Bay route to Europe that the main body of ice obstructing this route was in the City of Montreal and he added "that ice is just as massive in the warm dog days as it is during the winter months." He also stated that Fort Churchill had as much chance of becoming a port of call as a snowball had of escaping melting in Hell as long as this main body of Montreal ice existed.

Another gentleman, R. S. Dagleish, founder of the Dagleish Shipping Co. of Newcastle on Tyne, England, stated in August, 1938, "I loaded the first ship at Fort Churchill for Europe eight years ago with wheat and anyone who says Fort Churchill will not become a port—one of the world's greatest ports—does not know what he is talking about. Later, the same gentleman remarked at a press conference in Saskatoon, "I know what is wrong with the Hudson Bay Railway, of which Fort Churchill is the Atlantic terminal. "It is Montreal—the Canadian Pacific Railway and the Bank of Montreal. Eliminate that opposition and Fort Churchill would develop very rapidly as a port for it is an easy port for ships to approach."

The Dagleish Shipping Co.'s voice knows what it is talking about. Its ships have done business with Churchill. Its ships have crossed the Hudson's Bay during most of the months when even the Port of Montreal could only rely upon a similar short navigation season.

And a man can't be kept from hanging himself if he does it of his own free will and a cord.

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The Atom Bomb

Senator Edwin C. Johnson, ranking member of the U.S. Military Affairs Committee recently stated that new developments had resulted in the evolution of a bomb a thousand times more effective than the one dropped at Hiroshima. He added that scientists who worked on the project were convinced that the bomb would undoubtedly be used in future war operations and ended by stating that although the U.S. was willing to set up controls under the United Nations, as yet other nations have not been impressed sufficiently to agree to the steps that his committee knew were necessary if a world catastrophe was to be avoided. World War II will go down in history, if there is to be a future history for present day civilization, of having been the means of letting forth an uncontrollable destructive element. Science has eventually overstepped itself and it is now up to the people of the world to save themselves. That can only be done by the elimination of all causes for war. All causes for war can only be eliminated by every citizen of the world insisting that neither the means nor the will for making war shall rest in the hands of a few men in each nation. This is one time in history when every man should know his neighbor as he knows himself, understand him and try to work out a common viewpoint on all matters pertaining to life itself: When matters of vital importance to the life of a nation arise, its government seeks a mandate from the people by popular vote. War and its declaration today is the most vital thing in every man's life. Before any nation, through its Government, should have the power to make war, it should have a complete mandate from its people by the use of the ballot box. Who would dare to vote "yes" in view of the atom bomb?

Some may remark what is the use of a ballot in some parts of the world where the vote is controlled. No use perhaps excepting only the fact that where doubt existed as to the bonafides of that vote, the rest of the world would have obtained sufficient warning as to what was to happen and could take precautions to meet the situation.

"I have a husband who is rich,
He adds much to my life,
He buys me everything I want,
But please—don't tell his wife . . ."

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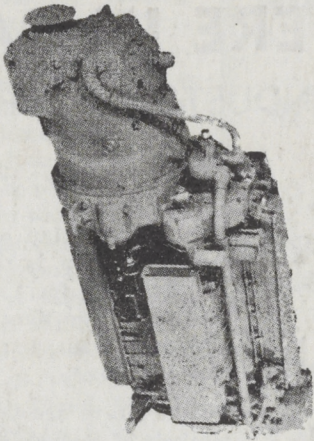
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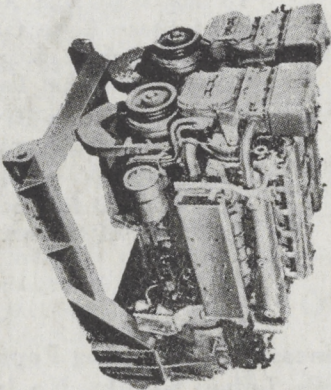
43 to 600 H.P. for Marine and Industrial Use

Minimum Weight — Maximum Torque

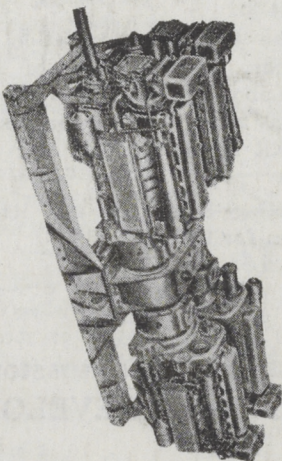
"SINGLES"



"TWINs"



"QUADs"



Literature and Prices on request

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